

**WHAT IS CLAIMED IS**

1    1.    A method for verifying an electron treatment field created by an  
2    electron treatment beam, comprising:

3                 positioning an imaging device; and

4                 operating said imaging device to detect an image created by  
5    photons generated in the delivery of said electron treatment beam.

1    2.    The method of claim 1, further comprising:

2                 enhancing said image to generate a representation of said electron  
3    treatment field.

1    3.    The method of claim 1, wherein said imaging device is a flat panel  
2    imaging device.

1    4.    The method of claim 1, wherein said imaging device is positioned  
2    downstream from a location to be irradiated by said electron treatment  
3    beam.

1    5.    The method of claim 3, wherein said flat panel imaging device  
2    comprises a plurality of solid state sensors.

1    6.    The method of claim 5, wherein said solid state sensors are  
2    amorphous silicon sensors.

1    7.    The method of claim 1, wherein said imaging device comprises  
2    video technology.

1    8.    The method of claim 1, wherein said enhancing further comprises:

2       determining an energy of said electron treatment beam;  
3       calculating an angular dependence of said photons on said electron  
4       treatment beam; and  
5       generating said representation of said electron treatment field based  
6       on said detected image and said angular dependence.

1     9.   The method of claim 1, wherein said enhancing further comprises:  
2       comparing said image to an open field image to generate an  
3       enhanced image of said electron treatment field.

1     10.   The method of claim 1, further comprising:  
2       displaying said representation of said electron treatment field on an  
3       operator display console.

1     11.   The method of claim 1, further comprising:  
2       comparing said representation of said electron treatment field to a  
3       desired image of said electron treatment field.

1     12.   The method of claim 8, further comprising:  
2       adjusting at least one of a collimator position and a patient position if  
3       said comparison indicates that said representation of said electron  
4       treatment field is different from said desired image of said electron  
5       treatment field.

1     13.   A method for verifying a treatment field in a radiation therapy device,  
2       comprising:  
3       positioning an imaging device at a body to be irradiated;  
4       directing an electron beam at said body;  
5       collimating said electron beam to generate an electron treatment  
6       field; and

7           detecting, using said imaging device, an image created by a plurality  
8   of photons after passing through said body, said plurality of photons  
9   contained within said electron treatment field.

1   14.   The method of claim 13, further comprising:  
2           enhancing said image to generate a representation of said electron  
3   treatment field.

1   15.   The method of claim 13, wherein said plurality of photons are  
2   bremsstrahlung photons.

1   16.   The method of claim 14, further comprising:  
2           comparing said representation with a desired image of said electron  
3   treatment field; and  
4           repositioning at least one of said body and a collimator device if said  
5   comparing indicates that said representation is not within an expected  
6   tolerance of said desired image.

1   17.   The method of claim 14, wherein said enhancing further comprises:  
2           determining an energy of said electron treatment beam;  
3           calculating an angular dependence of said photons on said electron  
4   treatment beam; and  
5           generating said representation of said electron treatment field based  
6   on said detected image and said angular dependence.

1   18.   The method of claim 13, further comprising:  
2           positioning an imaging device beneath a treatment zone;  
3           directing an electron beam at said treatment zone;  
4           collimating said electron beam to generate an electron treatment  
5   field;  
6           detecting, using said imaging device, an open field image; and

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7               comparing said open field image with said image to produce a  
8 representation of said electron treatment field.

1     19.   A radiation treatment field verification method, comprising:  
2               generating a radiation treatment beam comprised of one of primary  
3               electrons and primary photons;  
4               selectively shaping said radiation treatment beam to create a  
5               radiation treatment field on a body;  
6               detecting components of said radiation treatment beam on an  
7               imaging device positioned downstream of said body; and  
8               generating a representation of said radiation treatment field.

1     20.   The method of claim 19, wherein said radiation treatment beam  
2               comprises primary electrons and wherein said components of said  
3               radiation treatment beam are bremsstrahlung photons generated within  
4               said radiation treatment beam.

1     21.   The method of claim 19, wherein said radiation treatment beam  
2               comprises primary photons and wherein said components of said radiation  
3               treatment beam are photons of said radiation treatment beam.

1     22.   The method of claim 19, wherein said selectively shaping is  
2               performed by controllably positioning a photon collimator and an electron  
3               collimator.

1     23.   The method of claim 20, wherein said generating a representation  
2               further comprises:  
3               determining an energy of said primary electrons;  
4               calculating an angular dependence of said bremsstrahlung photons  
5               on said primary electrons; and

6 generating said representation of said radiation treatment field  
7 based on said detected components and said angular dependence.

1 24. The method of claim 20, wherein said generating a representation  
2 further comprises:

3 generating an open field representation of said radiation treatment  
4 field; and

5 comparing said open field representation with said components  
6 detected downstream of said body to generate said representation of said  
7 radiation treatment field.

1 25. A radiation therapy device, comprising:

2 an image detector positioned downstream from a body being  
3 irradiated by an electron beam and capturing a radiation image, said  
4 electron beam having a field shape at said body; and

5 a computing device coupled to said image detector and operative to  
6 enhance said radiation image to generate a representation of said radiation  
7 image.

1 26. The radiation therapy device of claim 25, further comprising:

2 a display device coupled to said computing device and displaying  
3 said representation of said radiation image.

1 27. The radiation therapy device of claim 25, further comprising:

2 at least a first collimating device positioned along a path of said  
3 electron beam and controllably positioned to generate said field shape.

1 28. A system for verifying an electron treatment field, comprising:

2 means for positioning an imaging device; and

3 means for operating said imaging device to detect an image created  
4 by photons generated in the delivery of said electron treatment field.